IN THE SPECIFICATION:

Please amend paragraph **[0009]** as follows:

[0009] Conventionally, metal heat sinks have been manufactured by extrusion or casting processes. When extruded, molten metal is forced through an extrusion die to produce an elongated extrusion of a cross-section taken transverse to the length thereof of a desired heat sink configuration. The ~~elongate~~ elongated extrusion is then sectioned transverse to the length thereof to provide the heat sinks. Cast heat sinks are manufactured by disposing a molten quantity of heat conductive material into a refractory mold.

Please amend paragraph **[0046]** as follows:

[0046] Turning now to FIG. 10, another embodiment of a heat sink 40 according to the present invention is illustrated. Heat sink 40 has a heat transfer element 42 and a heat dissipation element 44. A receptacle 46 formed in heat transfer element 42 is configured to receive at least a portion of a semiconductor device 50. As illustrated, receptacle ~~42~~ 46 receives a backside 52 and a lower portion of the periphery 54 of semiconductor device 50. Receptacle 46 conforms to a portion of the surface of semiconductor device 50 and contacts the entire backside 52, as well as a portion of the periphery 54 thereof to cup semiconductor device 50 to facilitate the transfer of heat therefrom to heat sink 40. Heat dissipation element 44, which is remote from semiconductor device 50, has spaced apart fins 48 extending therefrom.

Please amend paragraph **[0052]** as follows:

[0052] FIG. 7 schematically depicts various components, and operation, of an exemplary stereolithography apparatus 80 to facilitate the reader's understanding of the technology employed in implementation of the method of the present invention, although those of ordinary skill in the art will understand and appreciate that apparatus of other designs and manufacture may be employed in practicing the method of the present invention. The preferred, basic stereolithography apparatus for implementation of the method of the present invention, as well as operation of such apparatus, are described in great detail in United States Patents

assigned to DTM Corporation or to Board of ~~Reagents~~ Regents, The University of Texas System, both of Austin, Texas, or to The B.F. Goodrich Company of Akron, Ohio, such patents including, without limitation, U.S. Patents 4,863,538; 4,944,817; 5,017,753; 5,132,143; 5,155,321; 5,155,324; 5,156,697; 5,182,170; 5,252,264; 5,284,695; 5,304,329; 5,316,580; 5,332,051; 5,342,919; 5,352,405; 5,385,780; 5,430,666; 5,527,877; 5,648,450; 5,673,258; 5,733,497; 5,749,041; and 5,817,206. The disclosure of each of the foregoing patents is hereby incorporated herein by this reference.

Please amend paragraph **[0056]** as follows:

[0056] Apparatus 80 includes a horizontal platform 90 on which an object is to be fabricated or a substrate disposed for fabrication of an object thereon. Platform 90 is preferably vertically movable in fine, repeatable increments responsive to computer 82. Material 86 is disposed in a substantially uniform layer of desired thickness by a particulate spreader that operates under control of computer 82. The particulate spreader includes two cartridges 104a and 104b disposed adjacent platform 90 and a ~~roller 102~~ roller or scraper bar or ~~blade~~ blade 102 that is vertically fixed and horizontally movable across platform 90. As a sufficient quantity of particulate material 86 to form a layer of desired thickness is pushed upward out of each cartridge 104a, 104b by a vertically movable support 106a, 106b, respectively, roller or scraper bar or blade 102 spreads that quantity of particulate material 86 in a uniform layer of desired thickness (e.g., ~~.003 to .020 inches)~~ 0.003 to 0.020 inch) over platform 90, a substrate disposed thereon, or an object being fabricated on platform 90 or a substrate thereon. Supports 106a, 106b of cartridges 104a, 104b are preferably vertically movable in fine, repeatable increments under control of computer 82.

Please amend paragraph **[0058]** as follows:

[0058] With continuing reference to FIG. 7, in a selective laser sintering embodiment of the heat sink fabrication process of the present invention, material 86 preferably comprises resin-coated particles of one or more thermally conductive materials, such as copper, aluminum,

tungsten, titanium, ceramics, or a mixture of any of the foregoing, which material 86 is deposited by cartridges 104a, 104b and roller or scraper bar or blade 102 over platform 90 with the latter in its uppermost position. Alternatively, the particles of thermally conductive material may be uncoated, and used alone or mixed with particles of a suitable binder resin.

Please amend paragraph **[0060]** as follows:

[0060] When the fixative head includes a laser 92, apparatus 80 may also include a galvanometer 94 with one or more pivotal mirrors. Before fabrication of a first layer of an object is commenced, the operational parameters for apparatus 80 are set to adjust the size (diameter, if circular) of the laser ~~light beam~~ beam 98 used to consolidate or fix material 86. In addition, computer 82 automatically checks and, if necessary, adjusts by means known in the art the surface level 88 of material 86 over platform 90 or a substrate upon which an object is to be fabricated to maintain same at an appropriate focal length for laser beam 98. Alternatively, the height of the mirror of galvanometer 94 may be adjusted responsive to a detected surface level 88 to cause the focal point of laser beam 98 to be located precisely at the surface of material 86 at surface level 88 if level 88 is permitted to vary, although this approach is more complex.

Please amend paragraph **[0063]** as follows:

[0063] Once roller or scraper bar or blade 102 spreads and smooths material 86 into a first thin layer 108 of substantially uniform thickness (for example, ~~.003 to .020 inches)~~ 0.003 to 0.020 inch) over platform 90 or a substrate disposed thereon, laser 92 directs a laser beam 96 toward galvanometer ~~mounted mirrors 94~~ 94-mounted mirrors, which reflect a laser beam 98 toward selected regions of layer 108 in order to affix the particles of material 86 in the selected regions by melting or sintering particles of the thermally conductive component of material 86 or by melting a binder component of material 86 to secure adjacent particles of the thermally conductive component of material 86 that are exposed to laser beam 98 to one another. Particles of material 86 in these selected regions of layer 108 are preferably affixed in a regular horizontal pattern representative of a first or lowermost transverse layer or slice of the object to be

fabricated, as numerically defined and stored in computer 82. Accordingly, laser beam 98 is directed to impinge on particle layer 108 in those areas where the corresponding layer of the object to be fabricated is comprised of solid material and avoids those areas outside of a periphery of the corresponding layer of the object to be fabricated, as well as those areas of the corresponding layer where a void or aperture exists. Laser 98 is withdrawn upon consolidation of material 86 in regions comprising at least the peripheral outline of the corresponding layer of the object being fabricated.

Please amend paragraph **[0069]** as follows:

[0069] FIG. 8 illustrates a laminated object manufacturing (LOM) variation of the heat sink fabrication process of the present invention. LOM employs sheets of material to form an object. As depicted in FIG. 8, an apparatus 200 for effecting the LOM method includes a platform 202, actuating means 204 for moving platform 202 in vertical increments, a sheet feeder 206, a laser head 208, and a control computer 210. Sheet feeder 206 may comprise a photocopier-type feeder and provide individual sheets, or may comprise a roll-type feeder with a feed roller and a take-up roller, as desired. In either case, a sheet 212 of suitable material, such as a thin metal (e.g., copper, aluminum, tungsten, titanium, etc.) or a ceramic or glass sheet, is placed on platform 202. Laser head 208, under control computer 210, cuts an outline of the periphery of that layer of the object being fabricated. The surrounding sheet material may then be removed, if desired, and a second, uncut sheet 212N placed over sheet 212 is bonded to sheet 212 by suitable means, after which laser head 208 cuts the perimeter outline of the second layer of the object. If desired, ~~the~~ laser head 208 may be used to rapidly heat the second sheet 212N and bond it to the first sheet 212 before second sheet 212N is cut at its periphery. Alternatively, a heated roller 214 may be biased against and rolled over the uppermost sheet 212N to secure the uppermost sheet 212N and the immediately adjacent, underlying sheet 212 to each other before the uppermost sheet 212N is cut to define the periphery of the corresponding layer of the object being fabricated. The embodiment of FIG. 8 is particularly

suitable for substantially concurrently forming a large plurality of heat sinks on the backside of an unsingulated semiconductor wafer or other large-scale substrate.

Please amend paragraph **[0073]** as follows:

[0073] It is noted that a variety of machine vision systems are in existence, examples of which and their various structures and uses are described, without limitation, in U.S. Patents 4,526,646; 4,543,659; 4,736,437; 4,899,921; 5,059,559; 5,113,565; 5,145,099; 5,238,174; 5,463,227; 5,288,698; 5,471,310; 5,506,684; 5,516,023; 5,516,026; and 5,644,245. The disclosure of each of the immediately foregoing patents is hereby incorporated herein by this reference.

Please amend paragraph **[0074]** as follows:

[0074] Of course, apparatus 200 depicted in FIG. 8 could also be equipped with such a machine vision system.

Please amend paragraph **[0080]** as follows:

[0080] Each layer 110 of heat sink 20 may be built by first defining any internal and external object boundaries of that layer with laser beam 98, then hatching solid areas of that layer of heat sink 20 located within the object boundaries with laser beam 98. An internal boundary of a layer may comprise a portion of a channel 24 (see FIGs. 1 and 2), a ~~space~~ space 33 between adjacent fins 32 (see FIGs. 3-5), a through-hole, a void, or a recess in heat sink 20, for example. If a particular layer includes a boundary of a void in the object above or below that layer, then laser beam 98 is scanned in a series of closely-spaced, parallel vectors so as to develop a continuous surface, or skin, with improved strength and resolution. The time it takes to form each layer 110 depends upon the geometry thereof, the surface tension and viscosity of material 86, and the thickness of that layer.